

REMARKS

Claims 1-36 are pending in the present application. In the Office Action, the Examiner objected to claims 4-7 because the operator "H" was not defined in the claim. Applicant respectfully submits that the "H" superscript is defined in the specification to indicate a conjugate transpose function. See Patent Application, page 6, ll. 8-18. Applicant further submits that there is no statutory requirement that notation that is defined in the specification also be defined in the claims. Thus, Applicant respectfully submits that claim 4 is clear and requests that the Examiner's objection to claims 4-7 be withdrawn.

In the Office Action, claims 1-2, 4-6, 8-9, and 14-15 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Harrison (U.S. Patent No. 6,154,485) in view of Kalliojarvi (U.S. Patent No. 6,121,927). Claims 3, 7, 20, 29-33, and 35-36 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Harrison and Kalliojarvi in view of Alamouti (U.S. Patent No. 6,185,258). Claim 10 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Harrison and Kalliojarvi in view of Dabak, et al (U.S. Patent No. 6,594,473). Claim 34 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Harrison and Kalliojarvi in view of Alamouti and in further view of Rice (U.S. Patent Application Publication No. 2002/0172260). The Examiner's rejections are respectfully traversed.

Harrison is concerned with receiving signals using combined orthogonal transmit diversity and adaptive array techniques. Harrison describes a coefficient α that may allow a base transmitter to smoothly transition between orthogonal transmit diversity mode and adaptive array mode. This smooth transition may allow the base transmitter to smoothly disable the adaptive array mode in proportion to the degradation of the quality of feedback data from a receiver. See

Harrison, col. 8, ll. 23-35. However, as admitted by the Examiner, Harrison does not describe or suggest determining a code correlation parameter (λ) based on an auto-correlation of a channel estimate. Applicant notes that auto-correlation is a well-known mathematical function. See, e.g., Bracewell, "The Autocorrelation Function," *The Fourier Transform and Its Applications*, 3rd ed. New York: McGraw-Hill, pp. 40-45, 1999.

Kalliojarvi describes correlating a channel estimate associated with the received signal with a reference channel estimate. The Examiner alleges that this may be considered an autocorrelation because the channel estimate is correlated with a reference version of itself. Applicants respectfully disagree. An autocorrelation function is applied to a single signal and/or data stream and not to two separate signals and/or data streams, such as the channel estimate and the reference channel estimate described by Kalliojarvi. The correlation procedure described by Kalliojarvi is conventionally referred to as a cross-correlation of the channel estimate and the reference channel estimate. Accordingly, Applicants respectfully submit that Kalliojarvi does not teach or suggest the use of an autocorrelation function.

To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. As discussed above, neither Harrison nor Kalliojarvi describes or suggests the use of an autocorrelation function. Accordingly, Applicants respectfully submit that the prior art references fail to teach or suggest all of the limitations of the claimed invention. Furthermore, Harrison is completely silent with regard to performing any type of correlation function and Kalliojarvi teaches that the channel estimate and the reference channel estimate should be cross-correlated to determine the bearing of a received signal. Accordingly, neither of the cited references provide any suggestion or motivation to modify the prior art of record to arrive at the claimed invention.

The Examiner relies upon Alamouti to describe generation of an orthogonal code matrix. The Examiner also relies upon Dabak to describe a complex beamforming weight parameter having a magnitude and a phase, and Rice to describe using a look up table. However, these secondary references fail to remedy the fundamental deficiencies of Harrison and Kalliojarvi. Moreover, none of the cited references provide any suggestion or motivation to modify the prior art to arrive at Applicant's claimed invention.

For at least the aforementioned reasons, Applicants respectfully submit that the Examiner has failed to make a *prima facie* case that the present invention is obvious over Harrison, Kalliojarvi, Alamouti, Dabak, or Rice either alone or in combination. Applicants request that the Examiner's rejections of claims 1-10, 14-15, 20, 29-31, and 34-36 under 35 U.S.C. 103(a) be withdrawn.


In the Office Action, the Examiner indicated that claims 11-13, 16-19, 21-28, and 32-33 contain allowable subject matter, but the Examiner objected to these claims as being dependent upon a rejected base claim. Claims 11, 16, and 32 were rewritten in independent form including all the limitations of the base claim and any intervening claims in a previous response. Claims 12-13, 17-19, and 33 depend from the rewritten independent claims 11, 16, or 32. Contrary to the Examiner's allegation, claims 21-28 are not dependent upon any rejected base claims. Accordingly, Applicant respectfully submits that claims 11-13, 16-19, 21-28, and 32-33 are allowable and request that the Examiner's objections be withdrawn.

For the aforementioned reasons, it is respectfully submitted that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

Date: _____

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Mark W. Sincell, Ph.D.
Reg. No. 52,226
Williams Morgan & Amerson, P.C.
10333 Richmond Avenue, Suite 1100
Houston, TX 77042
(713) 934-7000
(713) 934-7011 (Fax)

AGENT FOR APPLICANTS